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B.A.N.Z.
ANTARCTIC RESEARCH EXPEDITION

1929-1931

UNDER THE COMMAND OF SIR DOUGLAS MAWSON, Kt., O.B.E., B.E., D.Sc., F.R.S.

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VOLUME VIII

PART 5

AMPHIPODA HYPERIIDEA

By

D. E. HURLEY

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PART 5

AMPHIPODA HYPERIIDEA

By
D. E. HURLEY

[B.A.N.Z.A.R.E. Reports, Series B, Vol. VIII, Part 5, pages 107-114]

Issued March, 1960

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AMPHIPODA HYPERIIDEA

By

D. E. HURLEY*

(Figs. 1-2.)

(*Submitted for publication, August*, 1959.)

INTRODUCTION.

The material reported on represents the pelagic amphipods from plankton collections made by the BANZAR Expedition of 1929-31 between Australia and the Wilkes Land Coast of Antarctica.

This material had previously been given to the late Professor G. E. Nicholls for examination and my work has been greatly simplified by the amount of sorting and preliminary identification which he had carried out before his death some years ago.

The Hyperiid collection contains surprisingly few species and is insufficient on its own to allow any wide-scale generalisations on distribution or ecology. The only novelty in the material is a male specimen of *Pegohyperia princeps*, known previously from a single female specimen from the South-East Atlantic described by Barnard (1932).

Included amongst the material were a number of tubes of Hyperiidea from the Australasian Antarctic Expedition of 1911-1914. These contained what at first I took to be preliminary identification labels inserted by Professor Nicholls. In looking for further station data after identification, I discovered a remarkable similarity with the material already described in the published reports of the A.A. Expedition by Dr. K. H. Barnard (1937). Comparison of Dr. Barnard's identifications, with this material, station by station and species by species, left no doubt that this was the same, less a few individual specimens from one or two stations. It is obvious that the varied history of the BANZARE Amphipod collections has resulted in the identified AAE Hyperiid material being at some time accidentally added to the sorted BANZARE material under the impression that the identifications were preliminary ones by Professor Nicholls.† I mention this because I have occasion to refer to some of these specimens and identifications later, but it is of some gratification to find that, with one minor exception, Dr. Barnard and I find ourselves in remarkable agreement.

COLLECTING STATIONS.

Full station data and collecting information are given in Johnston (1937), but the following basic station data are relevant to the hyperiid material.

Station 27: 64° 32′ S., 75° 55′ E. Echo, 3277 m. N 200 H, 1 hr., 1500 m.w., estimated depth 1000 m. In scattered pack.
Station 31: 66° 11′ S., 65° 10′ E. Echo, 2669 m. Pool in pack ice. Complete plankton station.
Station 32: 66° 35′ S., 61° 13′ E. Echo, 2163 m. N 200 H, 1500 m.w., 1 hr. Estimated depth 750 m.
Station 35: 66° 07′ S., 58° 26′ E. Echo, 2154 m. N 200 H, 2200 m.w., 2 hrs. Estimated depth 1570 m.
Station 45: 63° 51′ S., 54° 16′ E. Echo, 4354 m. Complete plankton station.
Station 46: 55° 11′ S., 55° 51′ E. Echo, 3950 m. Complete plankton station.
Station 58: 49° 30′ S., 70° 04′ E. In Hydrography Channel, a short distance south-easterly from Green I., Kerguelen. Echo, 50 m. Large rectangular dredge in 50 m.
Station 64: 49° 28′ S., 70° 33′ E. Off the entrance to Royal Sound, Kerguelen. Echo, 91 m. Large otter trawl, 1 hr.
Station 67: 45° 53′ S., 84° 33′ E. Echo, 3328 m. Plankton series.
Station 68: 45° 10′ S., 87° 13′ E. Echo, 3260 m. Complete plankton station.
Station 69: 43° 19′ S., 93° 56′ E. Echo, 2948 m. Plankton series.
Station 70: 42° 35′ S., 96° 46′ E. Echo, 3336 m. Complete plankton station.
Station 73: 38° 33′ S., 109° 22′ E. Echo, 4276 m. Plankton series.
Station 74: 37° 59′ S., 110° 59′ E. Echo, 4363 m. Complete plankton station.
Station 75: 36° 41′ S., 114° 55′ E. Echo, 4361 m. Complete plankton station.
Station 77: 44° 05′ S., 147° 35′ E. Echo, 1536 to 1353 m. Plankton series.
Station 78: 48° 23′ 30″ S., 146° 29′ 30″ E. Echo, 2474 m. Plankton series.

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† This must now be one of the most travelled sets of Antarctic Amphipods in captivity, having passed from the Antarctic to Australia in 1912-1914 aboard the 'Aurora', thence to Professor Chilton in New Zealand; following his death to Dr. K. H. Barnard in South Africa; back to Australia after identification to be associated with Professor Nicholls and Dr. Keith Sheard; and now to the present author in New Zealand who hopes to return it shortly to a well-earned retirement in South Australia.

Station 79: 52° 14′ S., 152° 46′ E. Echo, 3848 m. Plankton series.
Station 84: 61° 02′ S., 162° 29′ E. Echo, 2798 m. Plankton series.
Station 87: 65° 14′ S., 147° 13′ E. Echo, 3040 m. In pool in pack ice. Plankton series.
Station 90: 66° 21′ S., 138° 28′ E. Close to large tongue of pack ice and grounded bergs. Echo, 640 m. Large rectangular dredge.
Station 91: 64° 49′ S., 124° 58′ E. Echo, 3204 m. Along edge of pack ice. Plankton series.
Station 92: 64° 19′ S., 116° 42′ E. Echo, 2620 m. Plankton series.
Station 93: 64° 21′ S., 116° 02′ E. (mean position of townetting and trawl). Echo, 2286-2267 m. N 200 H., 1500 m.w. 1 hr.
Station 95: 64° 43′ S., 113° 03′ E. Echo, 1938 m. In loose pack. Plankton series.
Station 96: 65° 10′ S., 109° 32′ E. Echo, 2421 m. Plankton series.
Station 101: 65° 00′ 30″ S., 85° 08′ E. Echo, 3094 m. Very open pack. Plankton series.
Station 107: 66° 45′ S., 62° 03′ E. Echo, 177 m. Close to large bergs aground in shallow water. Vertical series.
Station 109: 51° 26′ S., 101° 34′ E. Echo, 3584 m. Plankton series.
Station 111: 44° 11′ S., 143° 36′ E. Echo, 4279 m. Plankton series.

REMARKS ON DISTRIBUTION AND PROCEDURE.

It has been customary in systematic accounts of the Hyperiidea to conclude discussion of each species with a brief summary of its distribution. As knowledge of the group has increased (and as species have been lumped), these summaries have widened from particular geographical localities to general lists of most or all of the major oceans, a tendency reaching its logical conclusion in remarks to the effect that "this species appears to be cosmopolitan".

It has been a temptation to follow this procedure, but the author has decided instead deliberately to omit all references to distribution of the common species. The information which could be given for most species is already available in the literature. More important, it is believed that further repetition of such generalized statements would be misleading. It is probable that an analysis of the information already available in the literature would show that many of these species are not truly cosmopolitan at all, but restricted to definite water masses with definable physical properties, recognised by hydrologists. It is likely that the distribution of many species of Hyperiids will prove to be, not cosmopolitan, but circumglobal, which is a very different thing. The author is accumulating data which it is not appropriate to detail in this paper, to determine if the distribution of individual species or even families can be related to their physical environment in this way. This is, of course, not a new idea at all, but one which has been somewhat neglected in Amphipod work. Lack of sufficient data has previously inhibited a broad-scale ecological approach to the question of hyperiid distribution, although isolated pioneers have made tentative efforts and the whole problem has probably not been far from the minds of most workers. By pointedly omitting generalized distributional remarks in this paper, it is hoped to promote the suggestion that the time is appropriate to think of the distribution of pelagic amphipods along such broad-scale ecological lines, with relation to the properties of the surrounding water masses.

In the systematic section which follows, only the more important recent summary papers have been cited, together with any subsequent references.

SYSTEMATICS.

AMPHIPODA HYPERIIDEA.

Family VIBILIIDAE.

Vibilia antarctica Stebbing, 1888.

Stn. 35 (N 200 H, 2200 m.w.), 1 specimen, 3·5 mm., plus doubtfully identified fragment; Stn. 109 (N 70 V, 250-100 m.), 2 specimens, 4·5 mm.

This species is easily distinguished from *Vibilia stebbingi*, which it is otherwise quite like, by the first antennae which have two distinct flagellar segments on their tips. Although Stebbing's original drawing (Stebbing, 1888, Pl. 150) of the general outline of the first antennae is not particularly characteristic, his figure shows the additional segments quite clearly and may be compared with the antennae of *V. propinqua* in his Pl. 147, which are like those of *V. stebbingi*.

Vibilia robusta Bovallius, 1887.

Stn. 111 (N 200 H, 1710-0 m.), 3 specimens, 9-19 mm.

One of these is by far the largest specimen of *Vibilia* I have ever seen, and is comparable in size with those recorded for this species by Stephensen (1918) from the Northern Hemisphere.

Vibilia stebbingi Behning and Woltereck, 1912.

Hurley, 1955: 125, figs. 1-22.

Stn. 31 (N 200 H, 1000 m.), 4 specimens, 9-11 mm.; Stn. 32 (N 200 H, 750 m.), 16 specimens, 9-10 mm; Stn. 79 (No. 5, N 70 V, 500-250 m.), 4 specimens, 4·5-9·0 mm.; Stn. 95 (N 70 V), 1 specimen, 3·5 mm.; Stn. 107 (O.T.L., 219 m.), 2 specimens, 13-14 mm.; Stn. 109 (N 70 V, 250-100 m.), 4 specimens, 6-7 mm.

This species is rather similar to *V. antarctica*, *V. viatrix* and *V. propinqua*. *V. antarctica* is easily distinguished by the distinct two segments on the end of its first antennae. *V. stebbingi* is satisfactorily defined from *V. viatrix* by the arrangement of teeth on the inner margins of the outer ramus of uropods 1-2. These are of equal size in Ur. I in *V. viatrix* with only a few very small teeth proximally in Ur. 2, but in *V. stebbingi* these margins are distinctly separated into large teeth distally and fine teeth proximally in both uropods.

Vibilia propinqua is also distinguishable from *V. stebbingi* and *V. antarctica* by the inner margin of the outer ramus of Uropod 1, which has 5 or 6 equally large teeth. There is no division into larger teeth distally and fine teeth proximally as in the latter two species.

Among the material which I identified as *V. stebbingi* were some specimens from the A.A.E. Collection ("T. net, 100 fathoms, 10.1.14") which Dr. Barnard had considered *V. propinqua*. They show the separation of uropod teeth characteristic of *V. stebbingi* and *V. antarctica*, and have the antennae of *V. stebbingi*.

The distal angle of segment 2 in Pr. 5 is not always as sharp as in some descriptions of *V. stebbingi*, but the serration of the 3rd uropods is deeper and more obvious than in *V. propinqua*. In the latter it is so fine as to be almost imperceptible in many specimens.

A row of setae is found posteriorly on the 5th segment of Pr. 4 in *V. stebbingi* although it is often not as obvious as in *V. propinqua*. I think it useful to include a key to the four species mentioned which may be more satisfactory than those at present available.

Key to *Vibilia stebbingi*, *V. antarctica*, *V. propinqua* and *V. viatrix*.

1.	Uropod 1 outer ramus, inner margin evenly toothed throughout length	2
	Uropod 1 outer ramus, inner margin coarsely toothed distally, finely toothed proximally	3
2.	Antenna 1 distally truncate, sublanceolate; peraeopods generally stout; Gn. 2 has distinctive row of spines along inferior margins of segments 5 and 6; Pr. 4, segment 5 almost as large as segment 6, not strongly spined; uropods deeply toothed	*V. viatrix*
	Antenna 1 distally rounded, suboval; peraeopods not noticeably stout; Gn. 2 has a few spines distally on segment 5; Pr. 4, segment 5 has distinct row of spines posteriorly, is barely 2/3 length segment 6; uropod teeth often coarse but not deeply incised	*V. propinqua*
3.	Antenna 1 flagellum has 2 small distinct end segments; Gn. 1 has single prominent spine inferiorly on segment 5 ..	*V. antarctica*
	Antenna 1 flagellum lacks 2 distinct small end segments; Gn. 1 has 3 prominent spines inferiorly on segment 5 ..	*V. stebbingi*

Genus Cyllopus Dana, 1853.

Barnard (1930: 405) has discussed this genus at length and concluded that the numerous species in the literature could be reduced to two definite species, *C. magellanicus* and *C. lucasii*, with *C. levis* Bovallius, 1887, a possible third species. Elsewhere (Hurley, 1955), I have resurrected the species *C. macropis*.

Amongst the A.A.E. material were specimens which agreed with *C. levis* in the shape of the second uropod inner ramus. After close comparison with *C. magellanicus* from Banzare material I must agree with Barnard that the *C. levis* form of the uropod is a sexual difference only. The shape of the uropod in all of the males in the collection is almost exactly as in Bovallius's figures for *C. levis*, but the serration agrees almost tooth for tooth with that found in the females which are indisputably *C. magellanicus*. The only difference is in the distal width, although superficially one might think the two types of uropods quite different.

Although one is still left with a lingering doubt that Bovallius might have had a distinct species in *C. levis*, the fact that it has not since been found, and the lack of significant differences other than the uropod shape and the 2nd epimeral plate suggest that *C. levis* is a synonym of *C. magellanicus*.

Cyllopus lucasii Bate, 1862.

Bate, 1862: 306, Pl. 50, fig. 2.

Stn. 45 (N 200 H, 200 m.w.), 1 female, 20 mm.; Stn. 93 (N 200 H, 1500 m.w.), 3 females, one (11 mm.) ovigerous, 10-13 mm.; 96 (N 200 H, 2200 m.w.), 5 females, 13-15 mm.; Stn. 101 (N 100 B, 128-0 m.), 5 females, 13-14 mm.

Cyllopus magellanicus Dana, 1853.

Hurley, 1955: 129, figs. 23-50.

Stn. 79 (No. 5, N 70 V, 500-250 m.), 1 female, 9 mm.; Stn. 93 (N 200 H, 1500 m.w.), 1 female, 11 mm.; Stn. 109 (N 70 V, 750-500 m.), 1 female, 10 mm.; Stn. 109 (N 70 V, 250-100 m.), 1 female, 11 mm.; Stn. 109 (N 70 V, "caught on net with salps, 350-0 m."), 1 female, 7 mm.; Stn. 109 (No. 36, 500-250 m.), 1 female, 10 mm.

Family HYPERIIDAE.

Hyperia galba Montagu, 1813.

Reid, 1955: 18.

Hyperia spinigera Bovallius, 1889. Hurley, 1955: 140, figs. 83-95; 1956: 15.

Stn. 32 (N 200 H, 750 m.), 1 male, 25 mm., 1 female, 15 mm.; Stn. 69 (N 200 H, 3000 m.w.), 1 female, 12 mm.

Reid (1955) has taken the step suggested by other authors and again united *H. spinigera* and *H. galba*, a move with which I am inclined to agree, although I am not completely happy about it in view of Barnard's earlier reversal of opinion after he had done the same thing two years previously (Barnard, 1930: 1932). These specimens are of the *H. spinigera* type.

HYPEROCHE MEDUSARUM (Kroyer), 1938.

Hurley, 1955: 144, figs. 96-114; 1956: 14; Vinogradov, 1956: 211.

Stn. 96 (N 200 H, 2200 m.w.), 1 female, 9 mm.

This specimen agrees with Bovallius's figures for *H. leutkeni* and with N.Z. specimens (Hurley, 1955: 147). *H. leutkeni* is now considered a synonym of *H. medusarum*.

PEGOHYPERIA PRINCEPS Barnard, 1932.

(Figures 1-2).

Barnard 1932: 277, figs. 162-164; pl. I, figs. 5, 5a.

Stn. 45 (N 200 H, 200 m.w.), 1 male, 25 mm.

In spite of the overall dirty brown appearance of this specimen and its long period in preservative, in reflected light it has a definite shagreen texture as described by Barnard for his specimen and it still shows iridescent coloration in patches. Much of the dorsal surface of the body shows a vivid metallic green when

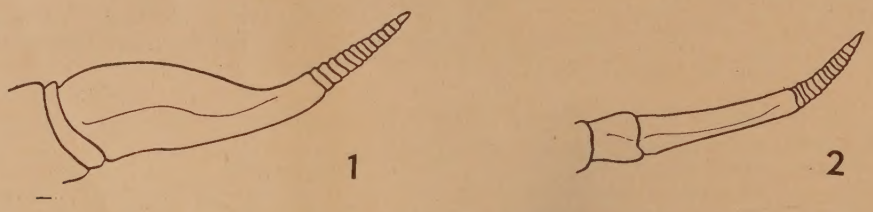

Fig. 1. *Pegohyperia princeps* Barnard. Antenna 1, male.
Fig. 2. *Pegohyperia princeps* Barnard. Antenna 2, male.

caught in the light, and there are small patches of violet on the urosome and coppery-red-brown on the lower half of the pleura of the pleon segments. Peraeon segments 3-5 are rather more distinctly produced in lateral triangular processes than show in Barnard's drawings of the females, and in Gnathopod 1 the 5th segment is produced to the end of the 6th. Antennae 1 and 2 (Figs. 1-2) are slightly different from those in the female; otherwise the male appears identical.

Distribution: Discovery Station 85, South-East Atlantic (23.vi.26, 33° 07′ S., 4° 30′ E., N 450 H, 2000 (—0) m., night).

PARATHEMISTO GAUDICHAUDII (Guérin), 1825.

Hurley, 1955: 161, figs. 159-174.

Long-legged form (Pl. 172, Stebbing, 1888).

Stn. 58, 50 m., No. 891 ("from stomach of Chaenichthyid fish No. 853"), 93 females up to 13 mm. and fragments; Stn. 46 (N 70 V, 100-50 m.), 1 female, 12 mm.; Stn. 64 (No. 991, 91 m.), 41 females, 10·0-12·5 mm.; Stn. 64 (No. 996, 91 m.), 67 females, and many fragments, up to 13 mm.; Stn. 93 (N 200 H, 1500 m.w.), 3 females, 13-14 mm.; Stn. 96 (or Stn. 45—label ambiguous) (N 200 H, 2200 m.w.), 1 female, 15 mm.; Coll. No. 1846 ("from the stomach of a lantern fish, '*Myctophum antarcticum*' off Macquarie I."), fragments of at least 5 females.

Short-legged form (Pl. 173, Stebbing, 1888).

Stn. 32 (N 200 H, 750 m.), 1 female, 12·5 mm.; Stn. 74 (N 70 V, 500-250 m.), 3 females, 4·0-4·5 mm.; Stn. 91 (No. 16, N 70 V, 50-0 m.), 3 females, 4·5-6·5 mm.; Stn. 79 (N 70 V, 500-250 m.), 1 female, 6 mm.; Stn. 91 (No. 13, N 70 V, 100-50 m.), 1 female, 6·5 mm.

Forma *thomsoni* (Plate 174, Stebbing, 1888).

Stn. 67 (N 200 H, 2000 m.w.), 1 female, 14 mm.; Stn. 69 (N 200 H, 3000 m.w.), 1 male, 13 mm.; Stn. 111 (N 200 H, 1710-0 m.), 3 females, 11-12 mm.

The differences between typical "short-legged" and "long-legged" forms, as figured in Stebbing and as appear in this material, are so striking as at first to suggest quite different species. However, the more material one sees, the more one is inclined to accept the short-legged specimens as the sub-adult forms of the long-legged species. It is significant that all of the short-legged forms identified in this material are below 7 mm.; the long-legged mostly 12 mm. upwards. Forma *thomsoni* seems an intermediate variant. Collection Numbers 991 and 996 are obviously from fish stomachs from the quantity of specimens and their mashed appearance.*

* Coll. 991 from stomach *Notothenia rossi* and Coll. 996 from stomach *Chaenichthys rhinocerotis*, both from Stn. 64. Ed.

Family PHRONIMIDAE.

Phronima sedentaria (Forskal), 1775.

Reid, 1955: 21. Hurley, 1955: 166, figs. 188-218; 1956: 16. Vinogradov, 1956: 210.

Stn. 67 (N 200 H, 3000 m.w.), 1 female, 22 mm.; Stn. 67 (N 200 H, 2000 m.w.), 3 females and numerous minute juveniles, 15-26 mm.; Stn. 68 (750-500 m.), 2 females, 18·0-18·5 mm.; Stn. 68 (250-100 m.), 1 female, 24 mm.; Stn. 69 (N 200 H, 3000 m.w.), 61 females, 11-28 mm., also numerous salp-houses and 2 mm. juveniles; Stn. 70 (N 100 B, 160-0 m.), 2 females and salp-houses, 23-24 mm.; Stn. 73 (N 200 H, 1000 m.w.), 2 females, 18-29 mm., also salp-house; Stn. 75 (Coll. No. 11a, N 70 V, 750-500 m.), 3 males, 5-8 mm.; Stn. 78 (250-100 m.), 1 male, 24 mm.; Stn. 111 (N 200 B, 90 m.), 1 female in salp-house, 24 mm.; Stn. 111 (N 200 H, 1710-0 m.), 16 females, 10-25 mm., with salp-houses.

Phronima atlantica Guérin, 1836.

Reid, 1955: 20.

Stn. 67 (N 200 H, 200 m.w.), 1 male, 1 female, 13 mm.; Stn. 67 (N 200 H, 3000 m.w.), 1 male, 13 mm.; Stn. 69, 1 intersex, 12 mm., 1 male, 11 mm.; Stn. 69 (N 200 H, 3000 m.w.), 2 females, 10-11 mm.; Stn. 73 (N 200 H, 1000 m.w.), 1 intersex, 9 mm.

Family PARAPHRONIMIDAE.

Paraphronima crassipes Claus, 1879.

Reid, 1955: 15, fig. 3. Hurley, 1956: 13. Vinogradov, 1955: 209.

Stn. 67 (N 200 H, 2000 m.w.), 1 male, 9 mm.; Stn. 69 (N 200 H, 3000 m.w.), 1 male, 8·5 mm.

Family PHROSINIDAE.

Primno macropa Guérin, 1836.

Hurley, 1955: 172, figs. 219-235. 1956: 17. Vinogradov, 1956: 209.

Euprimno macropus Reid, 1955: 23.

Stn. 27 (N 200 H, 1000 m.), 5 females, 11·5-15·0 mm.; Stn. 45 (N 200 H, 2000 m.w.), 1 female, 14 mm.; Stn. 46 (N 70 V, 100-50 m.), 1 female, 7·5 mm.; Stn. 67 (N 200 H, 3000 m.w.), 2 females, 12·0-12·5 mm.; Stn. 68 (750-500 m.), 1 fragment, female; Stn. 70 (N 100 B, 160-0 m.), 1 juv., 4·5 mm.; Stn. 70 (No. 95, N 70 V, 1000-750 m.), 2 females, 6·5-9·0 mm.; Stn. 77 (N 70 V, 750-0 m.), 1 female, 7 mm.; Stn. 78 (N 70 V, 500-250 m.), 1 female, 6 mm.; Stn. 84 (No. 106, N 70 V, 750-500 m.), 1 male, 4·5 mm.; Stn. 87 (N 70 V, 750-500 m.), 1 female, 5 mm.; Stn. 90 (N 200 H, 2200 m.w.), 4 females, 9-14 mm.; Stn. 92 (N 70 V, 750-500 m.), 1 male, 6 mm.; Stn. 92 (No. 32, 500-250 m.), 1 female, 11 mm.; Stn. 93 (N 200 H. 1500 m.w.), 6 females, 8·5-12·0 mm.; Stn. 109 (No. 41, N 70, 750-500 m.), 1 female, 9·5 mm.; Stn. 111 (N 200 H, 1710-0 m.), 2 fragments.

REFERENCES.

Barnard, K. H., 1930. Crustacea. Part XI—Amphipoda. *British Antarctic ("Terra Nova") Expedition*, 1910. *Nat. Hist. Rept. Zool.*, 8 (4): 307-454, text-figs. 1-63. British Museum (Nat. Hist.) London.

Barnard, K. H., 1932. Amphipoda. *Discovery Reports*, 5: 1-326, pl. 1, text-figs. 1-174. Cambridge Univ. Press, London.

Barnard, K. H., 1937. Amphipoda Hyperiidea. *Australian Antarctic Exped.*, 1911-1914, *Sci. Repts., series C, Zool. & Bot.*, 2 (5): 1-4.

Bate, C. Spence, 1862. *Catalogue of the specimens of Amphipodous Crustacea in the collection of the British Museum.* Pp. iv + 399, 58 pls. British Museum (Natural History), London.

Behning, A. and Woltereck, R., 1912. Achte Mitteilung über die Hyperiden der Valdivia-Expedition, insbesondere über die Vibiliden. *Zool. Anz.*, 41 (1): 1-11, text-figs. 1-11.

Bovallius, C., 1887. Contributions to a monograph of the Amphipoda Hyperiidea. Part 1: 1. The Families Tyronidae, Lanceolidae and Vibiliidae. *K. Svenska Vet.-Akad. Handl.*, n.s. 21 (5): 1-72, pls. 1-10, text-figs.

Bovallius, C., 1889. Contributions to a monograph of the Amphipoda Hyperiidea. Part 1: 2. Families Cyllopodidae, Paraphronimidae, Thaumatopsidae, Mimonectidae, Hyperiidae, Phronimidae, and Anchylomeridae. *K. Svenska Vet.-Akad. Handl.*, n.s. 22 (7): 1-434, pls. 1-18, text-figs.

Hurley, D. E., 1955. Pelagic Amphipods of the Sub-Order Hyperiidea in New Zealand waters. I.-Systematics. *Trans. R. Soc. N.Z.*, 83 (1): 119-194, text-figs. 1-17, map.

Hurley, D. E., 1956. Bathypelagic and other Hyperiidea from Californian waters. *Occ. Pap. Allan Hancock Foundation*, 18: 1-25.

Johnston, T. Harvey, 1937. Biological organisation and Station List. *B.A.N.Z. Antarctic Research Expedition* 1929-1931, *Repts. Ser. B (Zool. & Bot.)*, 1 (1): 1-48, figs. 1-4.

Reid, D. M., 1955. Amphipoda (Hyperiidea) of the Coast of Tropical West Africa. *Atlantide Report*, No. 3: 7-40, figs. 1-9.

Stebbing, T. R. R., 1888. Report on the Amphipoda collected by "H.M.S. Challenger" during the years 1873-76. *Challenger Repts.*, 29: xxiv and xiii & 1737 pp., 212 pls., 1 map (3 vols.). Eyre & Spottiswoode, London.

Stephensen, K., 1819. Hyperiidea-Amphipoda (Lanceolidae, Scinidae, Vibiliidae, Thaumatopsidae). *Rept. Danish Oceanogr. Exped. 1908-1910 to the Mediterranean and adjacent seas.* Vol. 2, Biol. D, 2: 1-70, figs. 1-32, charts 1-7.

Vinogradov, M. E., 1956. Giperiidy (Amphipoda-Hyperiidea) zapadnykh rajonov Beringova Morja. *Zool. Zhurn.*, 35 (2): 194-218, figs. 1-10, 2 tables.

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